

WHAT IS CLAIMED IS:

1. A composition for sealing display cells of a microcup electrophoretic display, which composition comprises a polymeric sealing material and a crosslinking system.
2. The composition of Claim 1 wherein said polymeric material is a thermoplastic elastomer.
3. The composition of Claim 2 wherein said thermoplastic elastomer is selected from a group consisting of polyurethanes, polyesters, polyolefins and tri-block or di-block copolymers of styrene or α -methylstyrene and isoprene, butadiene or ethylene/butylenes, crystalline rubbers and other EPDMs (Ethylene Propylene Diene Rubber terpolymers).
4. The composition of Claim 3 wherein said thermoplastic elastomer is selected from the Kraton™ D and G series from Kraton Polymer Company.
5. The composition of Claim 3 wherein said crystalline rubber is poly(ethylene-co-propylene-co-5-methylene-2-norbornene).
6. The composition of Claim 1 wherein said crosslinking system comprises a multifunctional isocyanate and a crosslinking agent for the multifunctional isocyanate.
7. The composition of Claim 6 wherein said multifunctional isocyanate is selected from a group consisting of hexamethylene diisocyanate (HDI), isophorone diisocyanate (IPDI), toluene diisocyanate (TDI) and 4,4'-diisocyanato diphenylmethane (MDI) and the polyisocyanates derived therefrom.
8. The composition of Claim 6 wherein said multifunctional isocyanate is Desmodur Z4470 BA, N-100, N3200, N3600, N3400, Z4470 BA or Z4470 SN from Bayer.
9. The composition of Claim 8 wherein said multifunctional isocyanate is Desmodur Z4470 BA or SN.

10. The composition of Claim 6 wherein said crosslinking agent for the multifunctional isocyanate is selected from a group consisting of multifunctional alcohols, thiols, ureas, thioureas, amines, anilines and water.

11. The composition of Claim 10 wherein said crosslinking agent is a polyol.

12. The composition of Claim 11 wherein said polyol is triethanol amine, N,N,N',N'-[tetrakis(2-hydroxyethyl)ethylene diamine], N,N,-diethanol aniline, polycaprolactone diol, poly(propylene glycol), poly(ethylene glycol), poly(tetramethylene glycol), polybutadiene diol or a derivative or copolymer thereof.

13. The composition of Claim 12 wherein said polyol is Multranol 9157, 4012, ARCOL LG-650, ARCOL(R) LHT-240 or a polybutadiene diol.

14. The composition of Claim 6 wherein the multifunctional isocyanate and the crosslinking agent have a total concentration in the range of about 2-50% by weight of the dry weight of the sealing layer.

15. The composition of Claim 14 wherein said total concentration of the multifunctional isocyanate and the crosslinking agent is in the range of about 10-40% by weight of the dry weight of the sealing layer.

16. The composition of Claim 6 which comprises a thermoplastic elastomer, a multifunctional isocyanate and a polyol.

17. The composition of Claim 16 wherein the molar ratio of the hydroxy group in the polyol to the -NCO in the multifunctional isocyanate is from about 1/9 to about 9/1.

18. The composition of Claim 17 wherein the hydroxy group in the polyol has a molar ratio to the -NCO in the multifunctional isocyanate from about 3/7 to about 7/3.

19. The composition of Claim 6 further comprising a catalyst.

20. The composition of Claim 19 wherein said catalyst is selected from a group consisting of tertiary amines, dibutyltin dilurate, dimethyltin dichloride, dibutyltin dilauryl mercaptide and stannous octoate.

21. The composition of Claim 20 wherein said catalyst is dibutyltin dilaurate.

22. The composition of Claim 19 wherein said catalyst is present in the amount of from about 0.01 to about 3% by weight, based on the dry weight of the sealing layer.

23. The composition of Claim 22 wherein said catalyst is present in the amount of from about 0.05 to about 2% by weight, based on the dry weight of the sealing layer.

24. The composition of Claim 1 wherein said crosslinking system comprises a multifunctional isothiocyanate and a crosslinking agent for the multifunctional isothiocyanate.

25. The composition of Claim 24 wherein said multifunctional isothiocyanate is selected from a group consisting of hexamethylene diisothiocyanate, isophorone diisothiocyanate, toluene diisothiocyanate, 4,4'-diisothiocyanato diphenylmethane and the polyisothiocyanates derived therefrom.

26. The composition of Claim 25 wherein said multifunctional isothiocyanates are hexamethylene diisothiocyanate, isophorone diisothiocyanate or a polyisothiocyanate derived therefrom.

27. The composition of Claim 24 wherein said crosslinking agent for the multifunctional isothiocyanate is selected from a group consisting of multifunctional alcohols, thiols, ureas, thioureas, amines, anilines and water.

28. The composition of Claim 27 wherein said crosslinking agent is a polyol.

29. The composition of Claim 28 wherein said polyol is triethanol amine, N,N,N',N'-[tetrakis(2-hydroxyethyl)ethylene diamine], N,N,-diethanolamine, polycaprolactone diol, poly(propylene glycol), poly(ethylene glycol), poly(tetramethylene glycol), polybutadiene diol or a derivative or copolymer thereof.

30. The composition of Claim 29 wherein said polyol is Multranol 9157, 4012, ARCOL LG-650, ARCOL(R) LHT-240 or a polybutadiene diol.

31. The composition of Claim 24 which comprises a thermoplastic elastomer, a multifunctional isothiocyanate and a polyol.

32. The composition of Claim 24 further comprising a catalyst.
33. The composition of Claim 1 wherein said crosslinking system comprises a multifunctional epoxide and a crosslinking agent for the multifunctional epoxide.
34. The composition of Claim 33 wherein said multifunctional epoxide is selected from a group consisting of bisphenol A-epichlorhydrin condensates, (3,4-epoxycyclohexyl)methyl-3,4-epoxycyclohexanecarboxylate, vinylcyclohexane dioxide, glycidyl isooctyl ether, epoxidized polybutadiene and epoxidized oils.
35. The composition of Claim 33 wherein said multifunctional epoxide is an aliphatic epoxide.
36. The composition of Claim 33 wherein said crosslinking agent is selected from the group consisting of multifunctional alcohols, thiols, carboxylic acids, ureas, thioureas, primary and secondary amines, anilines, anhydrides and Lewis acids.
37. The composition of Claim 33 wherein the total concentration of the multifunctional epoxide and the crosslinker is in the range of about 2-50% by weight of the dry weight of the sealing layer.
38. The composition of Claim 37 wherein said total concentration is in the range of about 10-40% by weight of the dry weight of the sealing layer.
39. The composition of Claim 33 further comprising a catalyst.
40. The composition of Claim 1 wherein said crosslinking system comprises a multifunctional aziridine and a crosslinking agent for the multifunctional aziridine.
41. The composition of Claim 40 wherein said multifunctional aziridine is selected from a group consisting of trimethylolpropane tris(2-methyl-1-aziridine propionate), XAMA-2, and XAMA-7 (polyfunctional aziridines from Goodrich).
42. The composition of Claim 40 wherein said multifunctional aziridine is trimethylolpropane tris(2-methyl-1-aziridine propionate).

43. The composition of Claim 40 wherein said crosslinking agent is selected from the group consisting of multifunctional alcohols, thiols, carboxylic acids, ureas, thioureas, primary and secondary amines, anilines, anhydrides and Lewis acids.

44. The composition of Claim 40 further comprising a catalyst.

45. The composition of Claim 1 which is dissolved or dispersed in isopropyl acetate, butyl acetate, methyl ethyl ketone (MEK), methyl propyl ketone, cyclohexanone, toluene, xylene, cyclohexane, cycloheptane or a isoparaffin.

46. The composition of Claim 1 further comprising pigment or conductive particles.

47. A method for improving display performance, structure integrity and longevity of an electrophoretic display which method comprises sealing the display cells with a sealing composition comprising a thermoplastic elastomer and a crosslinking system.

48. The method of Claim 47 wherein said thermoplastic elastomer is selected from a group consisting of polyurethanes, polyesters, polyolefins and tri-block or di-block copolymers of styrene or α -methylstyrene and isoprene, butadiene or ethylene/butylenes, crystalline rubbers and other EPDMs (Ethylene Propylene Diene Rubber terpolymers).

49. The method of Claim 48 wherein said thermoplastic elastomer is selected from the Kraton™ D and G series from Kraton Polymer Company.

50. The method of Claim 48 wherein said crystalline rubber is poly(ethylene-co-propylene-co-5-methylene-2-norbornene).

51. The method of Claim 47 wherein said crosslinking system comprises a multifunctional isocyanate, isothiocyanate, epoxide or aziridine and a crosslinking agent.

52. An electrophoretic display which comprises display cells sealed with a sealing composition comprising a thermoplastic elastomer and a crosslinking system.

53. The display of Claim 52 wherein said thermoplastic elastomer is selected from a group consisting of polyurethanes, polyesters, polyolefins and tri-block or di-block

copolymers of styrene or α -methylstyrene and isoprene, butadiene or ethylene/butylenes, crystalline rubbers and other EPDM (Ethylene Propylene Diene Rubber terpolymer).

54. The display of Claim 53 wherein said thermoplastic elastomer is selected from the Kraton™ D and G series from Kraton Polymer Company.

55. The display of Claim 53 wherein said crystalline rubber is poly(ethylene-co-propylene-co-5-methylene-2-norbornene).

56. The method of Claim 52 wherein said crosslinking system comprises a multifunctional isocyanate, isothiocyanate, epoxide or aziridine and a crosslinking agent.